REMARKS

In view of the above Amendment, Applicants believe the pending application is in condition for allowance.

Applicants thank the Examiner for the consideration given the present application. Claims 2-5, 8-10, 12-15, 24-27 are pending. Claims 1, 6, 7, 11 and 16-23 have been canceled, claims 24-27 have been added and claim 2 has been amended through this Reply. Claims 2, 24, and 26 are independent. Applicants respectfully request reconsideration of the rejected claims in light of the amendment and remarks presented herein, and earnestly seek timely allowance of all pending claims.

Priority

Applicants respectfully point out that foreign priority and the claim of foreign priority has been acknowledged in the Official Filing Receipt. Applicants respectfully request withdrawal of the request to claim foreign priority.

The Claims Define Patentable Subject Matter

The Office Action rejects claims 2, 3, 6-8 and 12-15 under 35 U.S.C. § 102(b) over Publication "Biocompatible surfaces by immobilization of heparin on diamond-like carbon films deposited on various substrates" to Steffen et al. (Steffen); rejects claims 3-5 under 35 U.S.C. § 103(a) over Steffen in view of U.S. Patent No. 6,537,310 to Palmaz et al. (Palmaz); and rejects

claims 9 and 10 under 35 U.S.C. § 103(a) over Steffen in view of U.S. Patent No. 6,083,570 to Lemelson et al. (Lemelson). These rejections are respectfully traversed.

Steffen discloses a special coupling technique that results in a covalent end-point attachment of heparin. The diamond-like carbon (DLC) film system consists of a chemically inert, uniform, dense and highly tetrahedrally bonded, hydrogenated amorphous carbon film (ta-C:H) with high adherence to the substrate and bioactive heparin macromolecules that are covalently bound to the ta-C:H film surface. See Fig. 1 and page 387 of Steffen.

The Office Action recites that the graft polymerization will not result in a different structure than suggested by the prior art. The Examiner interprets the polymer introduced by graft polymerization as a product-by-process. See item 5 of page 3 of the Office Action.

Section 2113 of the MPEP recites that once the Examiner provides a rational tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shift to Applicants to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product.

As discussed above, Steffen discloses that heparin is covalently bonded to the diamond-like carbon film. Since the DLC film is smooth and inert and is therefore difficult to modify with a functionality component, such as a biocompatible material. It is almost impossible to cause a chemical reaction between the DLC surface and a functionality component for generating a covalent bond therebetween. The very smooth surface is almost incapable of physical adsorption. Even if a functionality component is temporarily adsorbed by the surface,

the component immediately separates from the surface. See paragraph [0007] of the specification. Furthermore, it is possible to graft the biocompatible component to the surface of the inert DLC film. Grafting makes it possible to modify the surface of the DLC film with the polymer stably for a long term and provide both the characteristics of the DLC film, such as durability etc. and the characteristics of the biocompatible component. See paragraph [0023] of the specification. Thus, there is an unobvious difference between the claimed product of the present invention and product of Steffen.

Palmaz discloses various attempts to increase endothelialization of implanted stents including coating the stent, under ultrasonic conditions, with a synthetic or biological, active or inactive agent, such as heparin, endothelium derived growth factor, vascular growth factors, silicon etc., coating a stent with a silane compound with vinyl functionality and grafting monomers, oligomers or polymers onto the surface of the stent using infrared radiation, microwave radiation or high voltage polymerization to the stent. See col. 6, lines 29-54 of Palmaz. The various grafting procedures disclosed by Palmaz do not graft any of the components onto an inert and smooth material, such as diamond-like carbon film. Stents are generally made of metal. See col. 10, lines 11-24. It appears that the processes disclosed by Palmaz gives no indication that it would stably modify the surface of the DLC film with a biocompatible component because Palmaz only works with stents.

Furthermore, there is no reason to combine Steffen with Palmaz. For example, Steffen concerns covalent bonding of heparin to the diamond-like carbon film and Palmaz concerns grafting biocompatible metal or metal-like material onto a stent (composed of metal) which have

little similarity with diamond-like carbon film. Lemelson fails to cure the deficiencies of Steffen and Palmaz. Accordingly, the applied references, alone or in any combination, fail to teach or suggest the recited features of independent claim 2.

For at least the reasons stated above, independent claim 2 is patentably distinct from the applied references. The dependent claims are at least allowable by virtue of their dependence on corresponding allowable independent claim 2.

Accordingly, withdrawal of the rejections of the claims based on the applied references is respectfully requested.

New Claims 24-27 are Patentable

New claims 24-27 are added.

Independent claim 24 recites, "a medical material comprising a biocompatible component without a sugar chain covalently bonded to a surface of a diamond-like carbon film formed on a surface of a base material." Independent claim 26 recites, "a medical material comprising a biocompatible component without a sugar chain ionically bonded to a surface of a diamond-like carbon film formed on a surface of a base material." The applied references fail to teach or suggest the recited features of independent claims 24 and 26.

Steffen only discloses Heparin and fails to teach or suggest a biocompatible component without a sugar chain, including a protein, a peptide and a nucleobase that is covalently or ionically bonded to the DLC film. Lemelson and Palmaz fail to cure the deficiencies of Steffen.

Thus, the applied references fail to teach or suggest the recited features of independent claims 24 and 26.

Dependent claims 25 and 27 are at least patentable due to their dependence on allowable independent claims 24 and 26, respectively and for the additional features they recite.

CONCLUSION

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Obert H. Chu, Reg. No. 52,744 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§ 1.16 or 1.147; particularly, extension of time fees.

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Respectfully submitted,

By _____

D. Richard Anderson
Registration No.: 40,439
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant